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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,627	12/04/2001	Howard M. Kingston	286697-00002-1	6740

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EXAMINER

HUGHES, JAMES P

ART UNIT PAPER NUMBER

2881

DATE MAILED: 02/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/004,627

Applicant(s)

KINGSTON, HOWARD M.

Examiner

James P. Hughes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25 and 33-38 is/are allowed.
- 6) ☒ Claim(s) 1-24 and 28-32 is/are rejected.
- 7) ☒ Claim(s) 26 and 27 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/04/2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02. The oath or declaration is defective because the inventors' residence – the city and state, or foreign country – is not presented anywhere in the application.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Figure 1 is referred to as a "typical calibration curve" in the Description of the Prior r Art section (page 2, line 11) indicating Figure 1 as prior art. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code (page 5, line 24). Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Objections

4. Claims 21, 22, and 35 are objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term “about” used when identifying the voltage ranges, does not adequately define said ranges. A more definite range is required.

5. Claim 24 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 24 fails to significantly limit claim 1, upon which it is dependent. Claim 24’s limitation of “in effecting said equilibrium equilibrating at least one said spiked enriched stable isotopic specie or element *dynamically* with a specie of element contained within sample” [emphases added] (line 3) does not significantly limit claim 1. Claim 1 includes the limitation of permitting equilibrium between the spiked enriched stable isotope elements or species and the sample. Claim 24’s limitation of *dynamically* equilibrating does not further limit claim 1 because the spikes and samples in isotope dilution mass spectrometry are inherently liquids, gases, or aqueous solutions; thus, allowing them to come to equilibrium inherently includes a dynamic equilibrium.

6. Claim 26 and 27 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 26 fails to significantly further limit claim 25, upon which it is dependent. Claim 26's limitation of "a sample analyzer for analyzing said sample and delivering sample analysis information to said microprocessor" (line 3-4) does not significantly further limit claim 25. Claim 25 includes the limitations of a mass spectrometer for receiving and processing a sample by isotope ratio determination and a microprocessor for receiving information about the determination from the mass spectrometer (lines 9-12) – i.e. a sample analyzer that sends analysis information to the microprocessor.

Further, claim 27 is objected to because it is dependent on claim 26 and thus has the inherent deficiencies discussed above.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 28 - 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the limitation "said controller" in line 4. There is insufficient antecedent basis for this limitation in the claim. The limitation of a controller is not identified in claim 25, or any other claim on which claim 28 draws its dependence. Following, the limitation of "said controller" is repeated in claim 29 (line3), which is dependent on claim 28.

Claim 29 recites the limitation "said *chemical* modification apparatus" in line 4 [emphasis added]. There is insufficient antecedent basis for this limitation in the claim. While the

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limitation of a modification apparatus is identified in claim 28 (line 3), the limitation of a *chemical* modification apparatus is not identified in claim 28 or any other claim on which claim 29 draws its dependence. Following, the limitation of "said *chemical* modification apparatus" [emphasis added] is repeated in claim 30 (line 3) and claim 32 (lines 5, 6, 8, and 9), which are dependent on claim 29. Claim 31 is rejected because of its dependent on claim 30.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1 - 24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1, and its dependent claims 6, and 9 of U.S. Patent No. 5,414,259 in view of Fassett et al (Isotope Dilution Mass Spectrometry for Accurate Elemental Analysis).

Claim 1 of Kingston ('259) teaches a method of automated isotope dilution mass spectrometry comprising: providing at least one sample to be analyzed, spiking at least one enriched stable isotope of said element or species to be analyzed (lines 1-8), equilibrating the

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spiked enriched stable isotope elements or species and said samples to be analyzed (line 9), and separating all said species from said sample and subsequently determining the concentration of the species to be measured by employing isotropic element specie ratios (lines 11-14). While claim 1, does not identify the preparation and analysis of an enriched stable isotope of an element – claim one only identifies a specie – it was commonly know in the art at the time of invention that an isotope of an element or a specie is employed in isotope dilution measurements as shown by Fassett (pg. 644 A, col.1, lines 36-40).

Claim 6 of Kingston ('259) teaches employing a mass spectrometer to determine the isotropic element specie ratios of claim 1. Claim 9 of Kingston ('259) teaches employing chromatography to effect said separation of claim 1.

It was commonly known in the art at the time of the invention that when conducting Isotope Dilution Mass Spectrometry (IDMS) analysis measurements – as in claim 1 and 6 of Kingston ('259) – that Atmospheric Pressure Ionization (API) techniques, such as Electrospray Ionization (ESI), Atmospheric Pressure Chemical Ionization (APCI), or Inductively Coupled Plasma (ICP) ionization is used in IDMS – as shown in Fassett (pg. 643 A, col. 2, lines 7-15).

It was also commonly known in the art at the time of the invention that when using mass spectrometers for analysis, microprocessors are used to receive and send analysis information as well as automatically control numerous functions including sample chromatography, ionization, and spectrometry. Thus, claims 1, 6, 14, 15, 20 and 24 of the instant application have been taught or were commonly known obvious additions, to the claims of Kingston ('259) at the time of the invention.

Regarding claims 4 and 5 of the instant application; claim 2 of Kingston ('259) teaches employing the isotope dilution method of claim 1 on more than one measured species simultaneously.

Regarding claims 2, 3, 7 -13, and 19 the Fassett paper discloses commonly known aspects, equipment and procedures of Isotope Dilution Mass Spectrometry (IDMS). The sample must be dissolved (pg. 646 A, col. 1, line 21) – e.g. liquid, gas, or aqueous solution – (applicable to claims 2, 3, 19). An advantage of IDMS is that it need not be a quantitative analysis; a qualitative measurement can be made (pg. 646 A, col. 1, lines 65-67; applicable to claims 12, 13). IDMS measurements may be made for extremely small concentrations – ultra-trace levels – at near instrument detection limits (pg. 648 A, col. 3, lines 25 – 40; applicable to claims 7 and 8). Fassett additionally discloses that preconcentrating the sample is commonly used to increase the sensitivity of measurements (pg. 648 A, col. 3, line 30; applicable to claims 9, 11). It would have been an obvious combination to use the liquid sample as disclosed by Fassett with the chromatography step in claim 9 of Kingston ('259) to use liquid chromatography in the preconcentration step (applicable to claim 10). Thus, claims 2 – 5, 7 – 13, and 19 of the instant application have been taught or were commonly known obvious additions, to the claims of Kingston ('259) at the time of the invention.

Claims 16, 17, 18, and 21 - 23 are rejected because of their dependency on claim 1.

Allowable Subject Matter

9. Claim 25 is allowed because the prior art fails to teach or fairly suggest an apparatus, or means for automated isotope dilution mass spectrometry comprising a sample receiving apparatus, spiked introduction apparatus for introducing at least one spiked enriched stable isotope element or specie into said sample for permitting equilibration therebetween, an atmospheric pressure ionizer for receiving said equilibrated sample and spiked elements or species and ionizing the same, a mass spectrometer for receiving and processing said ions by isotope ration determination, and a microprocessor for receiving information about said determination from said mass spectrometer. Following, claims 33-38 are allowable by virtue of their dependence on claim 25.

10. Claims 16-18 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 16 is allowable because the prior art fails to teach or fairly suggest a method, an apparatus, or means for employing said method to monitor concentration of contaminants on a plurality of wet baths employed in clean room sin semiconductor manufacture in combination with the limitations of the claims upon which claim 16 is dependent.

Claim 17 is allowable because the prior art fails to teach or fairly suggest a method, an apparatus, or means for employing said method sequentially on a plurality of said wet baths in combination with the limitations of the claims upon which claim 17 is dependent.

Claim 18 is allowable because the prior art fails to teach or fairly suggest a method, an apparatus, or means for employing said method simultaneously on a plurality of said wet baths in combination with the limitations of the claims upon which claim 18 is dependent.

Claim 23 is allowable because the prior art fails to teach or fairly suggest a method, an apparatus, or means for employing said method to determine which said bath was the origin of said species or elements in combination with the limitations of the claims upon which claim 23 is dependent.

11. Claims 28-32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claims 28-32 are allowable because of their dependence on the allowed claim 25.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kingston (WO 99/39198) teaches a method of speciated isotope dilution mass spectrometer of reactive specie and related methods. Fisher et al. (6,486,469) discloses that electrospray ionization (EI), inductively coupled plasma ionization (ICP), and atmospheric pressure chemical ionization (APCI) are all types of atmospheric pressure ionization (API). Freedman et al. (5,352,893) teaches an isotropic-ration plasma source mass spectrometer.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to James P. Hughes whose telephone number is 703-305-5675. The examiner can normally be reached on Monday - Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on 703-308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

James P. Hughes
Examiner
Art Unit 2881

JH

February 7, 2003


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800